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February 15, 2021

Dr. James D. Fielder
Secretary of Higher Education
Maryland Higher Education Commission
6 North Liberty Street, 10th Floor
Baltimore, MD 21201

Dear Secretary Fielder:

Please find attached the University of Maryland, College Park's response to the objection raised by Morgan State University regarding our proposal to offer a B.S. degree completion program in Mechatronics at the Universities at Shady Grove. Our response includes a letter to you, provided to us, by Dr. Anne Khademian, Executive Director of the Universities at Shady Grove Regional Higher Education Center, and Dr. Sanjay Rai, Chief Academic Officer at Montgomery College. Their letter provides additional context of the regional need for the program that we have proposed.

Sincerely,

Darryll J. Pines
President
Glenn L. Martin Professor of Aerospace Engineering

Enclosure

cc: Ms. Lyndsay Bases, Educational Policy Analyst, MHEC
Ms. Karen King-Sheridan, Associate Director of Collegiate Affairs, MHEC
Dr. DeRionne Pollard, President, Montgomery College
Dr. Ann Wylie, Interim Senior Vice President and Provost, University of Maryland, College Park
Dr. Emily Dow, Assistant Secretary for Academic Affairs, MHEC
Dr. Antoinette Coleman, Associate Vice Chancellor for Academic Affairs, USM

University of Maryland College Park's Response to Morgan State University's Objection to our proposal to offer the final two years of a B.S. in Mechatronics at the Universities at Shady Grove

February 15, 2021

First and foremost, Morgan State University's (MSU's) objection does not meet the criteria specified in the memorandum from the Maryland Higher Education Commission (MHEC) to Maryland university presidents dated September 2, 2020 (revised October 1, 2020). MSU's objection is based on item 3 of COMAR 13B.02.03.27, *Unreasonable Program Duplication*. Secretary Fielder's letter clearly states that any objection using this element must include eight elements, and MSU's objection omits six of them.

- ***Evidence that there is an existing program with similar curriculum and program objectives. The title of the program, degree level, area of specialization (if applicable), and HEGIS and CIP code must be provided in the objection.*** While MSU submitted a proposal for a 4-year bachelor's program just prior to our proposal, an MSU program does not yet exist.
- ***Evidence of current student enrollment in an existing program.*** Since an MSU program does not yet exist, there are no current enrollments.
- ***Evidence and thorough analysis that an existing program has similar curriculum and course offerings. A side-by-side comparison of courses and course objectives must be included in the objection.*** MSU's objection does not contain a side-by-side comparison of courses in the program. If it had, differences between the two programs would be evident.
- ***Evidence and analysis that existing program(s) currently meet market demand.*** MSU's objection does not address this point.
- ***Evidence that tuition costs (including fees), admission requirements, and graduation requirements of the proposed program is duplicative of an existing program.*** This material is not presented. If it had been, significant differences would have been evident.
- ***Evidence that the implementation of the proposed program would cause demonstrable harm to another institution. Demonstrable harm may include the transition of enrollment from one institution to another such that enrollment in an existing program would decline in light of the addition of a similar or duplicative program.*** This evidence could not have been provided, but below we present a consideration of the geographically separated student populations to be reached by the two programs.

MSU's objection does not account for the distance between the Universities at Shady Grove and MSU, as required. Despite these missing elements, we will take this opportunity to address some of the points made.

TIMING AND NEED FOR OFF-CAMPUS PROGRAM: While MSU's proposal was circulated just three weeks prior to ours, most experienced practitioners would reasonably understand that it can take many months, even years, to develop a high quality new academic curriculum. Our efforts began as early as 2017, after the State of Maryland requested that we develop new STEM program offerings in the recently opened Biomedical Sciences and Engineering (BSE) Building at the Universities at Shady Grove Regional Higher Education Center (USG). This information is publicly available at https://shadygrove.umd.edu/about-usg/BSE-education-facility as well as in the BSE fact sheet published in May of 2019 and available on USG's web site.

We did not learn of MSU's intentions until November 13, 2020. On November 19, 2020 we alerted our MSU colleagues of our longstanding plans and forwarded to them the Letter of Intent submitted to the University System of Maryland in October 2020. We approached our MSU colleagues to discuss and compare the program plans and stated that, although our program had been under development for several years, we supported their efforts due to the significant workforce needs. We received no feedback.

As noted in section C of our proposal, we identified expected job growth and workforce need. The US Department of Labor, Education and Training Agency (DOL ETA) recently added a classification for Mechatronics Engineer (17-2199.05) distinct from other occupations.[1] Combined with the related occupations of Robotics Engineers (17-2199.08) and others, the U.S. Department of Labor's Bureau of Labor Statistics, Occupational Employment Statistics Program (BOL OESP) projects 4%-6% average growth in this occupation from 2018-2028 nationwide, accounting for nearly 12,000 new jobs.[2] The State of Maryland in particular is projected to see higher than average opportunities for Mechatronics Engineers[3], both in terms of job placement and median wages, which according to the BOL OESP are 45% higher than the national average ($140,840 in Maryland vs. $96,980 nationwide). This corresponds to over 7,000 jobs in Mechatronics and related industries specifically, and an even greater number considering the broadly based skill set that Mechatronics engineering students offer to employers.[4]

The initial design of UMD's program was developed by Prof. Norman Wereley (Dept. Chair of Aerospace Engineering), Prof. Alison Flatau (Associate Chair of Aerospace Engineering), and Prof. Balakumar Balachandran (Dept. Chair of Mechanical Engineering), each of whom has over 25 years of experience in teaching topics and performing research in Mechatronics Engineering. This program was seen as a great opportunity to develop a curriculum that leverages these faculty members' research programs and pedagogical expertise into a stand-alone offering at USG, catering solely to 3rd and 4th year engineering students who have completed their first

[1] 2018 ASEE Southeastern Section Conference American Society for Engineering Education, 2018 Growth of 2-Year programs for Mechatronics Marilyn Barger, Richard Gilbert

[2] National Center for O*NET Development. 17-2199.05 - Mechatronics Engineers. O*NET Online. Retrieved January 28, 2020, from https:// www.onetonline.org/link/summary/17-2199.05

[3] National Center for O*NET Development. State Map for Mechatronics Engineers. My Next Move. Retrieved January 28, 2020, from https:// www.mynextmove.org/profile/state/17-2199.05?from=profile

[4] https://www.dllr.state.md.us/lmi/iandoproj/maryland.shtml

two years of an engineering program at a local community college, in particular, Montgomery Community College (MCC). The key objective would be to offer students who have completed the first two years of an engineering or other associate degree the opportunity to complete a four-year program with skills directly relevant to major industries in the region, such as the State of Maryland's strong aerospace engineering industry.

Expected enrollment is up to 40 students per year, producing about 36 bachelor's degree recipients annually. Students from the two-year pre-engineering program at MCC, located in close proximity to the USG campus, would be a primary focus to recruit incoming students. We note that both our Mechanical Engineering and Aerospace Engineering enrollments have increased by 60% in the last 10 years, with a combined enrollment of over 1800 students. Creation of the new Mechatronics degree at USG would provide a means to relieve some of the existing enrollment pressure in these majors at College Park, which is indicative of the regional demand for these related majors.

A proposal for funding was submitted in Fall 2017 to the University System of Maryland in response to a call from the Governor's Office for new programs that would support workforce development. Funding was approved in Spring 2018. Subsequently, a ***NOTIFICATION OF NEW PROGRAM UNDER DEVELOPMENT*** was submitted to USG in August 2018, and work began in earnest to develop the detailed curriculum for the USG Mechatronics Engineering program. The UMD Senate and then President Pines approved the detailed curriculum proposal in Fall 2020 following established shared governance processes within UMD. It was not until all of the internal approval steps had been completed that a proposal would go simultaneously to the USM Board of Regents and to MHEC on December 9, 2020. On December 22, we received notification that the cover letter for the submission required an additional sentence explicitly requesting a waiver to the on-campus requirement as outlined in COMAR 13B.02.03.20, although the proposal clearly stated the intention of offering the program exclusively at USG.[5]

STUDENT AUDIENCE: A key element of this program is targeted to the needs of working students living in Montgomery County and the nearby region. It is expected that over 90% of students in this program would reside in or be working in Montgomery County, and the vast majority will have completed their first two years of engineering at MCC, with a smaller number participating from community colleges in adjacent counties. Hands-on laboratory course work is required in a quality engineering program, which will be provided through the infrastructure in the recently completed Biomedical Sciences and Engineering Education (BSE) building. This component alone will require students to be regionally co-located, as there are no plans to build an online replacement for these core pedagogical components. In addition, USG is a non-residential campus, restricting the student audience to those who can commute to USG on a regular basis. Morgan State University is over 50 miles from the USG Campus, and it is highly unlikely that working students from Montgomery County would endure a daily commute to

[5] We note that this additional sentence with explicit language requesting a waiver for off-campus delivery was not included, nor requested, in two prior proposals for engineering programs to be offered exclusively at USG in 2018 and 2019, thus we had no expectation that such a sentence would be necessary.

MSU to undertake studies there.

Montgomery Community College is the largest feeder campus to our engineering programs at College Park, sending us on average 80 students each year, over 65% of which end up selecting Aerospace, Mechanical, Electrical or Computer Engineering. The relationship is similar at the campus level, where College Park receives approximately 43% of MCC students who transition to a 4-year institution in the state of Maryland.[6] In contrast, fewer than 1% of MCC students matriculate to MSU. More broadly, MSU attracts only 4% of its students from Montgomery County, consistent with the distance and it being a residential campus. When examining our programs offered at USG, 93% of the over 1000 UMD students who have matriculated through our USG programs in the last five years carried out their first two years of study at either MCC or Frederick Community College. Finally, examining the transfer populations from the other direction, MSU's proposal explicitly calls out the Community College of Baltimore County and Anne Arundel Community College as its primary feeders of transfer students: a total of six students from these two community colleges have transferred to our programs at USG in the last five years. This is a clear indication of the geographic differences in student audience, and a strong indicator that little to no credibly negative impact should be expected if both degree programs are offered.

In closing, the objection from MSU should be nullified because of the points made above. Our proposed degree program has been a well-documented, multi-year development effort that came to fruition in January 2021. It leverages the expertise of several of our most highly capable instructors and researchers in the field of Mechatronics. The program addresses key unmet work force needs of the State of Maryland in robotics, unmanned air systems, aerospace, and mechanical engineering. Morgan State University's attempt to block the development of this engineering program at the USG campus would effectively block opportunities for the diverse population of students in the Montgomery County region from pursuing a high demand degree program. These are students who, for many reasons, are unable to travel over 50 miles to participate in a program offered by MSU. We contend that this outcome would not be educationally sound and would unduly harm current and future students and the State of Maryland's system of public higher education, as U.S. District Judge Catherine Blake cautioned against in issuing her November 2017 memorandum decision.[7]

[6] Based on 2018 data published in the Maryland Higher Education Data Book, p. 13 and 14. https://mhec.maryland.gov/publications/Documents/Research/AnnualPublications/2020DataBook.pdf

[7] The Coalition for Equity and Excellence in Maryland Higher Education, et al, v. Maryland Higher Education Commission, et. al., U.S.D.C., D. Maryland, Civ. No. CCB-06-2773 (November 8, 2017).

February 12, 2021

Dr. James D. Fielder, Jr.
Secretary of Education
Maryland Higher Education Commission
Nancy S. Grasmick Building, 10th Floor
6 North Liberty Street
Baltimore, MD 21201
Sent via email:

Dear Dr. Fielder,

Morgan State University has submitted its objection to a Bachelor of Science in Mechatronics at the University of Maryland, College Park (UMD) at Universities at Shady Grove (USG) in Montgomery County. As the Executive Director at USG and the Senior Vice President for Academic Affairs at Montgomery College, we are writing to strongly express our support for UMD's degree program in Mechatronics. Based on our commitment to comprehensive, affordable education and student success, and our location on the Interstate 270-Technology Corridor, we have serious concerns about how the lack of a Mechatronics engineering presence in the County will negatively impact our students and the needs of the regional workforce. Students need access to myriad institutions for completing their baccalaureate degree and there is a clear and compelling need for a complementary program in Mechatronics in the Washington Metropolitan Area. Contrary to Morgan's claims, Montgomery County needs and can support a local offering in this new and innovative STEM engineering program.

The USG Mission Statement, submitted to MHEC in December 2018, is "To support and expand pathways to affordable, high-quality public higher education that meet the distinctive needs of the region and are designed to support workforce and economic development in the state; to achieve these goals through partnerships and collaborations with academic, business, public sector and community organizations that promote student success, high academic achievement and professional advancement."

To accomplish that mission, we work closely and collaboratively with nine University System of Maryland (USM) institutions and community colleges on 2+2 pathways. The foundation for these pathways is the more than twenty-year partnership with Montgomery College in delivering higher education in Montgomery County and the region. This partnership is successful for the diverse student population of transfer students that graduate and are career ready. Seventy percent of USG students graduate within four years. This is higher than the USM-wide rate of 55% for transfer students. This partnership continues to strengthen and grow, most recently to focus on increasing the number of STEM students and thus, STEM graduates in Maryland.

The very diverse student population in Montgomery County and the immediate region need ***local*** STEM undergraduate opportunities, and particularly engineering opportunities, to meet the growing workforce development needs of the I-270 corridor and the region.

Critical Points For Our Support for UMD

Montgomery College students that transfer to programs at USG need local opportunities to pursue the second two years of their undergraduate degrees. They are unlikely to transfer to undergraduate programs outside of the local area (50 miles or less) and intend to stay local (within the state) after graduation.

- Many of the students at Montgomery College and USG are the first in their families to attend college. Many need to stay local to provide financial support for their extended families. As of Fall 2020, 63% of all undergraduates at USG live in Montgomery County. However, 85% of all students live within 30 miles of USG.
- Many of the undergraduate students at USG transferred from Montgomery College. According to a recent study, a large percentage of the students at USG have transferred from Montgomery College. In the past six years nearly 4000 students have transferred directly from Montgomery College to USG. With more STEM degrees planned to come to USG, it is likely that more Montgomery College students will transfer in the future.
- The Montgomery College and USG student population is diverse reflecting the growing diversity in the County. The diversity of the students is expected to grow based on projected enrollments of the current Montgomery County Public School system. The services at both institutions focus on serving this diverse transfer population.
    - At Montgomery College 52% of students identified as either Black or Hispanic in Fall 2020, with a growing number of students identifying as multi-race.
    - At USG 46% of students identifying as either Black/African American or Hispanic in Fall 2020. Many students also identify as more than one race.
- The Montgomery College to USG "2+2 Model" ensures that students can earn a four-year degree at a lower cost than the traditional four-year model. Using Montgomery College and USG tuition and fees, data shows that students who follow the community college to university pathway (2+2) in Maryland save over $50,000 on their bachelor's degree.
- Most importantly, ninety-one percent of graduates from programs at USG indicate that they plan to work/live in the region after graduation, according to a Spring 2019 student survey.

Many students already in the pipeline, following the pathway from Montgomery County Public Schools through Montgomery College to USG, are looking for STEM opportunities, specifically those in the new disciplines in engineering such as Mechatronics.

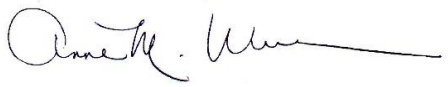
- One of Montgomery College's most popular transfer programs is engineering. Montgomery College's enrollment in engineering majors currently stands at approximately 1,100 for nine different areas of engineering. The College transfers at least 150 students per year to its major receiving institutions. Of those, around 50% are Mechanical Engineering and Electrical Engineering majors, who would be the potential transfer candidates to Mechatronics at the University of Maryland, College Park at USG.
- Montgomery College's innovative Early College General Engineering program and Middle College program provide Montgomery County Public School students with the opportunity to complete their high school graduation requirements while also fulfilling the requirements for Montgomery College A.S. degree in General Engineering. These programs currently enroll 75 students, and the dual enrollment programs are expected to continue to grow. These students will have the option to transfer to engineering programs at USG, and we are hopeful to include new programs, such as University of Maryland, College Park's Biocomputational Engineering, Embedded Systems and Internet of Things, and Mechatronics as well as UMBC's Computer Science.

A UMD B.S. Mechatronics program based at USG is essential to meet the needs of the local and regional workforce along the Interstate-270 corridor, where companies are seeking to grow the number of county residents with the STEM skills necessary to fill workforce requirements.

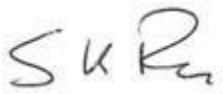
- There are currently 349,445 jobs related to Mechatronics within 50 miles of USG. This is expected to grow by 36,122 jobs (10%) by 2030.
- In Montgomery County, there are currently 35,248 jobs related to Mechatronics. This is expected to grow by 2,946 jobs (8%) by 2030.
- The median salary for Mechatronics related jobs within Montgomery County is $110,592. This is higher than the average within 50 miles of USG of $105,216.
- Between January 2017 and December 2020, there was a 173% increase in unique Mechatronics related job postings within 50 miles of USG. There was an 87% increase in Montgomery County.
- Sources of these data include: District of Columbia Department of Employment Services; Maryland Department of Labor, Licensing and Regulation, Office of Labor Market Analysis and Information; Virginia Employment Commission, Economic Information Services, EMSI.

On behalf of USG and Montgomery College, we thank you in advance for considering our request to deny the Morgan State University objection for the University of Maryland, College Park's B.S. in Mechatronics program to be offered at USG.

Respectfully,



Dr. Anne Khademian
Executive Director, Universities at Shady Grove
Associate Vice Chancellor, Academic and Student Affairs, USM



Dr. Sanjay Rai
Senior Vice President Academic Affairs
Montgomery College

cc:
Ms. Lyndsay Bases, Educational Policy Analyst, MHEC
Ms. Karen King-Sheridan, Associate Director of Collegiate Affairs, MHEC
Dr. Darryl Pines, President, University of Maryland, College Park
Dr. DeRionne Pollard, President, Montgomery College
Dr. Ann Wylie, Interim Provost, University of Maryland, College Park
Dr. Antoinette Coleman, Associate Vice Chancellor for Academic Affairs, USM